What is claimed is:

1. A method of screening for a compound which induces a DNA repair pathway of a cell, comprising:

a) contacting at least one component of a DNA repair pathway with a non-circularized retroviral cDNA in the presence of a test compound;

b) contacting said at least one component of a DNA repair pathway with a non-circularized retroviral cDNA in the absence of said test compound; and

c) determining whether the amount of retroviral cDNA circularization is increased in the presence of said test compound relative to the amount of retroviral cDNA circularization in the absence of said test compound.

2. The method according to claim 1, wherein said component contacted with the test compound is a nucleic acid molecule encoding a polypeptide selected from the group consisting of XPA, XPB, XPC, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

3. The method according to claim 2, wherein said nucleic acid molecule encodes XPB or XPD.

4. The method according to claim 3, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

5. The method according to claim 3, wherein said nucleic acid molecule encoding XPB has a nucleotide sequence of SEQ ID NO:1 and wherein said nucleic acid molecule encoding XPD has a nucleotide sequence of SEQ ID NO:3.

6. The method according to claim 1, wherein said component contacted with the test compound is a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

7. The method according to claim 6, wherein said polypeptide is XPB or XPD.

8. The method according to claim 7, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

9. The method according to claim 1, wherein at least one component of said DNA repair pathway in the absence of said test compound exhibits reduced biological activity relative to wild-type biological activity of said component.

10. The method according to claim 9, wherein said component exhibiting reduced biological activity is a nucleic acid molecule encoding a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

11. The method according to claim 10, wherein said nucleic acid molecule encodes XPB or XPD.

12. The method according to claim 11, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

13. The method according to claim 11, wherein said nucleic acid molecule encoding XPB has a nucleotide sequence of SEQ ID NO:1 and wherein said nucleic acid molecule encoding XPD has a nucleotide sequence of SEQ ID NO:3.

14. The method according to claim 9, wherein said component exhibiting reduced biological activity is a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

15. The method according to claim 14, wherein said polypeptide is XPB or XPD.

16. The method according to claim 15, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

17. The method according to claim 1, wherein said test compound directly or indirectly upregulates the expression of at least one component of a DNA repair pathway.

18. The method according to claim 17, wherein said upregulated component of a DNA repair pathway is a nucleic acid molecule encoding a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

19. The method according to claim 18, wherein said nucleic acid molecule encodes XPB or XPD.

20. The method according to claim 19, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

21. The method according to claim 19, wherein said nucleic acid molecule encoding XPB has a nucleotide sequence of SEQ ID NO:1 and wherein said nucleic acid molecule encoding XPD has a nucleotide sequence of SEQ ID NO:3.

22. The method according to claim 1, wherein said test compound directly or indirectly upregulates the biological activity of at least one component of a DNA repair pathway.

23. The method according to claim 22, wherein said upregulated component of a DNA repair pathway is a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

24. The method according to claim 22, wherein said polypeptide is XPB or XPD.

25. The method according to claim 24, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

26. The method according to claim 1, wherein said retroviral cDNA comprises at least one marker gene and at least one promoter and wherein said marker gene is expressed from said promoter upon retroviral cDNA circularization.

27. The method according to claim 26, wherein said increase in retroviral cDNA circularization is detected by an increase in the level of expression of said marker gene in the presence of said test compound relative to the level of expression of said marker gene in the absence of said test compound.

28. The method according to claim 26, wherein said increase in retroviral cDNA circularization is detected by an increase in the level of activity of the polypeptide expressed from said marker gene in the presence of said test compound relative to the level of activity of the polypeptide expressed from said marker gene in the absence of said test compound.

29. The method according to claim 27, wherein said marker gene encodes green fluorescent protein (GFP), red fluorescent protein (DsRed), alkaline phosphatase (AP), β-lactamase, chloramphenicol acetyltransferase (CAT), adenosine deaminase (ADA), aminoglycoside phosphotransferase (neor, G418r) dihydrofolate reductase (DHFR), hygromycin-B-phosphotransferase (HPH), thymidine kinase (TK), lacZ (encoding β-galactosidase), luciferase (luc), or xanthine guanine phosphoribosyltransferase (XGPRT).

30. The method according to claim 26, wherein said promoter is an adenovirus promoter, an SV40 promoter, a parvovirus promoter, a vaccinia virus promoter, a cytomegalovirus promoter, an MSH2 promoter, or a mammalian genomic DNA promoter.

31. The method according to claim 26, wherein said promoter is a 3-phosphoglycerate kinase gene promoter, an alcohol dehydrogenase-2 promoter, or a metallothionine promoter.

32. The method according to claim 1, wherein steps (a) and (b) occur in a cell or in cell extract.

33. The method according to claim 32, wherein said cell is a mammalian or yeast cell.

34. The method according to claim 1, wherein said compound inhibits retroviral cDNA integration into the genome of a cell.

35. The method of claim 34, wherein said compound prevents retroviral infection.

36. A compound that induces a DNA repair pathway of a cell identified according to the method of claim 1.

37. A pharmaceutical composition for the treatment of a retroviral infection comprising a therapeutically effective amount of at least one compound identified according to the method of claim 1, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient.

38. A method of inducing a DNA repair pathway of a cell comprising administering at least one compound identified according to the method of claim 1 to said cell.

39. The method according to claim 38, wherein said compound inhibits retroviral cDNA integration into the genome of said cell.

40. A method of treating a retroviral infection of a patient comprising administering at least one compound identified according to the method of claim 1 to said patient.

41. The method according to claim 40, wherein said patient is a mammal.

42. The method according to claim 41, wherein said mammal is avian, feline, canine, bovine, ovine, porcine, equine, rodent, simian, or human.

43. The method according to claim 42, wherein said mammal is a human.

44. The method according to claim 40, wherein said retroviral infection is associated with at least one condition selected from the group consisting of acquired immune deficiency syndrome (AIDS), human immunodeficiency virus (HIV) infection, cancer, human adult T-cell leukemia, lymphoma, feline immunodeficiency virus (FIV), Type I diabetes, and multiple sclerosis.

45. The method according to claim 45, wherein said retroviral infection is HIV infection or AIDS.

46. A kit for identifying a compound that induces a DNA repair pathway comprising a retrovirus or retroviral vector having a marker gene that is expressed upon retroviral cDNA circularization.

47. The kit according to claim 46, further comprising at least one conventional kit component.

48. Use of a compound identified according to the method of claim 1 in the manufacture of a pharmaceutical composition for the treatment of a retroviral infection.

49. A method of identifying a compound that inhibits retroviral cDNA integration into a host genome comprising:

a) contacting a first cell or cell extract with a non-circularized retroviral cDNA in the presence of a test compound;

b) contacting a second cell or cell extract with a non-circularized retroviral cDNA in the absence of said test compound, wherein said first and said second cell or cell extract are of the same cell type; and

c) determining whether the amount of retroviral cDNA circularization is increased in the presence of said test compound relative to the amount of retroviral cDNA circularization in the absence of said test compound.

50. The method according to claim 49, wherein said retroviral cDNA comprises at least one marker gene and at least one promoter and wherein said marker gene is expressed from said promoter upon retroviral cDNA circularization.

51. The method according to claim 50, wherein said increase in retroviral cDNA circularization is detected by an increase in the level of expression of said marker gene in the presence of said test compound relative to the level of expression of said marker gene in the absence of said test compound.

52. The method according to claim 50, wherein said increase in retroviral cDNA circularization is detected by an increase in the level of activity of the polypeptide expressed from said marker gene in the presence of said test compound relative to the level of activity of the polypeptide expressed from said marker gene in the absence of said test compound.

53. The method according to claim 50, wherein said marker gene encodes green fluorescent protein (GFP), red fluorescent protein (DsRed), alkaline phosphatase (AP), β-lactamase, chloramphenicol acetyltransferase (CAT), adenosine deaminase (ADA), aminoglycoside phosphotransferase (neor, G418r) dihydrofolate reductase (DHFR), hygromycin-B-phosphotransferase (HPH), thymidine kinase (TK), lacZ (encoding β-galactosidase), luciferase (luc), or xanthine guanine phosphoribosyltransferase (XGPRT).

54. The method according to claim 50, wherein said promoter is an adenovirus promoter, an SV40 promoter, a parvovirus promoter, a vaccinia virus promoter, a cytomegalovirus promoter, an MSH2 promoter, or a mammalian genomic DNA promoter.

55. The method according to claim 50, wherein said promoter is a 3-phosphoglycerate kinase gene promoter, an alcohol dehydrogenase-2 promoter, or a metallothionine promoter.

56. The method according to claim 49, wherein said cell type is mammalian or yeast.

57. A compound that inhibits retroviral cDNA integration into a host cell genome identified according to the method of claim 49.

58. A pharmaceutical composition for the treatment of a retroviral infection comprising a therapeutically effective amount of at least one compound identified according to the method of claim 49, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient.

59. A method of inhibiting retroviral cDNA integration into a host cell genome by administering a compound identified according to the method of claim 49 to said cell.

60. A method of treating a retroviral infection of a patient comprising administering at least one compound identified according to the method of claim 49 to said patient.

61. The method according to claim 60, wherein said patient is a mammal.

62. The method according to claim 61, wherein said mammal is avian, feline, canine, bovine, ovine, porcine, equine, rodent, simian, or human.

63. The method according to claim 62, wherein said mammal is a human.

64. The method according to claim 60, wherein said retroviral infection is associated with at least one condition selected from the group consisting of acquired immune deficiency syndrome (AIDS), human immunodeficiency virus (HIV) infection, cancer, human adult T-cell leukemia, lymphoma, feline immunodeficiency virus (FIV), Type I diabetes, and multiple sclerosis.

65. The method according to claim 64, wherein said retroviral infection is HIV infection or AIDS.

66. Use of a compound identified according to the method of claim 49 in the manufacture of a pharmaceutical composition for the treatment of a retroviral infection.

67. A kit for identifying a compound that inhibits retroviral cDNA integration into a host genome comprising a retrovirus or retroviral vector having a marker gene that is expressed upon retroviral cDNA circularization.

68. The kit according to claim 67, further comprising at least one conventional kit component.

69. A retroviral vector comprising a nucleic acid molecule having promoter and a marker gene that is expressed upon circularization of said nucleic acid molecule.

70. The retroviral vector of claim 69, wherein said marker gene encodes green fluorescent protein (GFP), red fluorescent protein (DsRed), alkaline phosphatase (AP), β-lactamase, chloramphenicol acetyltransferase (CAT), adenosine deaminase (ADA), aminoglycoside phosphotransferase (neor, G418r) dihydrofolate reductase (DHFR), hygromycin-B-

phosphotransferase (HPH), thymidine kinase (TK), lacZ (encoding β-galactosidase), luciferase (luc), or xanthine guanine phosphoribosyltransferase (XGPRT).

71. The retroviral vector of claim 69, wherein said promoter is an adenovirus promoter, an SV40 promoter, a parvovirus promoter, a vaccinia virus promoter, a cytomegalovirus promoter, an MSH2 promoter, or a mammalian genomic DNA promoter.

72. The retroviral vector of claim 69, wherein said promoter is a 3-phosphoglycerate kinase gene promoter, an alcohol dehydrogenase-2 promoter, or a metallothionine promoter.

73. The retroviral vector of claim 69 comprising the nucleotide sequence of SEQ ID NO:5 or SEQ ID NO:6.

74. A method of screening for a compound which induces a DNA repair pathway of a cell, comprising:

a) contacting at least one component of a DNA repair pathway with a non-circularized retroviral cDNA in the presence of a test compound; and

b) determining the amount of retroviral cDNA circularization.

75. A method of identifying a compound that inhibits retroviral cDNA integration into a host genome comprising:

a) contacting a cell or cell extract with a non-circularized retroviral cDNA in the presence of a test compound; and

b) determining the amount of retroviral cDNA circularization.

76. A method of screening for a compound which inhibits a DNA repair pathway of a cell, comprising:

a) contacting at least one component of a DNA repair pathway with a non-circularized retroviral cDNA in the presence of a test compound;

b) contacting said at least one component of a DNA repair pathway with a non-circularized retroviral cDNA in the absence of said test compound; and

c) determining whether the amount of retroviral cDNA circularization is decreased in the presence of said test compound relative to the amount of retroviral cDNA circularization in the absence of said test compound.

77. The method according to claim 76, wherein said component contacted with the test compound is a nucleic acid molecule encoding a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

78. The method according to claim 77, wherein said nucleic acid molecule encodes XPB or XPD.

79. The method according to claim 78, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

80. The method according to claim 78, wherein said nucleic acid molecule encoding XPB has a nucleotide sequence of SEQ ID NO:1 and wherein said nucleic acid molecule encoding XPD has a nucleotide sequence of SEQ ID NO:3.

81. The method according to claim 76, wherein said component contacted with the test compound is a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

82. The method according to claim 81, wherein said polypeptide is XPB or XPD.

83. The method according to claim 82, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

84. The method according to claim 76, wherein said test compound directly or indirectly downregulates the expression of at least one component of a DNA repair pathway.

85. The method according to claim 84, wherein said downregulated component of a DNA repair pathway is a nucleic acid molecule encoding a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3,

XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

86. The method according to claim 85, wherein said nucleic acid molecule encodes XPB or XPD.

87. The method according to claim 86, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

88. The method according to claim 86, wherein said nucleic acid molecule encoding XPB has a nucleotide sequence of SEQ ID NO:1 and wherein said nucleic acid molecule encoding XPD has a nucleotide sequence of SEQ ID NO:3.

89. The method according to claim 76, wherein said test compound directly or indirectly downregulates the biological activity of at least one component of a DNA repair pathway.

90. The method according to claim 89, wherein said downregulated component of a DNA repair pathway is a polypeptide selected from the group consisting of XPA, XPB, XPC, XPD, XPE, XPF, XPG, RAD50, RAD52, RAD54, RAD57, RAD59, MSH2, CDC9, hRAD51, hRAD51B, hRAD51C, hRAD51D, hXRCC2, hXRCC3, XRCC4, ligase IV, hMRE11, XRS2 (NBS1), DNA-PK, and Ku70/80 heterodimer, and homologs thereof.

91. The method according to claim 89, wherein said polypeptide is XPB or XPD.

92. The method according to claim 91, wherein said XPB has an amino acid sequence of SEQ ID NO:2 and wherein said XPD has an amino acid sequence of SEQ ID NO:4.

93. The method according to claim 76, wherein said retroviral cDNA comprises at least one marker gene and at least one promoter and wherein said marker gene is expressed from said promoter upon retroviral cDNA circularization.

94. The method according to claim 93, wherein said decrease in retroviral cDNA circularization is detected by a decrease in the level of expression of said marker gene in the

presence of said test compound relative to the level of expression of said marker gene in the absence of said test compound.

95. The method according to claim 93, wherein said decrease in retroviral cDNA circularization is detected by a decrease in the level of activity of the polypeptide expressed from said marker gene in the presence of said test compound relative to the level of activity of the polypeptide expressed from said marker gene in the absence of said test compound.

96. The method according to claim 93, wherein said marker gene encodes green fluorescent protein (GFP), red fluorescent protein (DsRed), alkaline phosphatase (AP), β-lactamase, chloramphenicol acetyltransferase (CAT), adenosine deaminase (ADA), aminoglycoside phosphotransferase (neor, G418r) dihydrofolate reductase (DHFR), hygromycin-B-phosphotransferase (HPH), thymidine kinase (TK), lacZ (encoding β-galactosidase), luciferase (luc), or xanthine guanine phosphoribosyltransferase (XGPRT).

97. The method according to claim 93, wherein said promoter is an adenovirus promoter, an SV40 promoter, a parvovirus promoter, a vaccinia virus promoter, a cytomegalovirus promoter, an MSH2 promoter, or a mammalian genomic DNA promoter.

98. The method according to claim 93, wherein said promoter is a 3-phosphoglycerate kinase gene promoter, an alcohol dehydrogenase-2 promoter, or a metallothionine promoter.

99. The method according to claim 76, wherein steps (a) and (b) occur in a cell or in cell extract.

100. The method according to claim 99, wherein said cell is a mammalian or yeast cell.

101. The method according to claim 76, wherein said compound increases retroviral cDNA integration into the genome of a cell.

102. A compound that inhibits a DNA repair pathway of a cell identified according to the method of claim 76.

103. A pharmaceutical composition for increasing efficiency of gene delivery in a gene therapy comprising a therapeutically effective amount of at least one compound identified according to the method of claim 76, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient.

104. A method of inhibiting a DNA repair pathway of a cell comprising administering at least one compound identified according to the method of claim 76 to said cell.

105. The method according to claim 104, wherein said compound increases retroviral cDNA integration into the genome of said cell.

106. A method of improving efficiency of gene delivery in a gene therapy of a patient comprising administering at least one compound identified according to the method of claim 76 to said patient.

107. The method according to claim 106, wherein said patient is a mammal.

108. The method according to claim 107, wherein said mammal is avian, feline, canine, bovine, ovine, porcine, equine, rodent, simian, or human.

109. The method according to claim 108, wherein said mammal is a human.

110. A kit for identifying a compound that inhibits a DNA repair pathway comprising a retrovirus or retroviral vector having a marker gene that is expressed upon retroviral cDNA circularization.

111. The kit according to claim 110, further comprising at least one conventional kit component.

112. Use of a compound identified according to the method of claim 76 in the manufacture of a pharmaceutical composition for increasing the efficiency of gene delivery in a gene therapy.

113. A method of identifying a compound that increases retroviral cDNA integration into a host genome comprising:

a) contacting a first cell or cell extract with a non-circularized retroviral cDNA in the presence of a test compound;

b) contacting a second cell or cell extract with a non-circularized retroviral cDNA in the absence of said test compound, wherein said first and said second cell or cell extract are of the same cell type; and

c) determining whether the amount of retroviral cDNA circularization is decreased in the presence of said test compound relative to the amount of retroviral cDNA circularization in the absence of said test compound.

114. The method according to claim 113, wherein said retroviral cDNA comprises at least one marker gene and at least one promoter and wherein said marker gene is expressed from said promoter upon retroviral cDNA circularization.

115. The method according to claim 113, wherein said decrease in retroviral cDNA circularization is detected by a decrease in the level of expression of said marker gene in the presence of said test compound relative to the level of expression of said marker gene in the absence of said test compound.

116. The method according to claim 114, wherein said decrease in retroviral cDNA circularization is detected by a decrease in the level of activity of the polypeptide expressed from said marker gene in the presence of said test compound relative to the level of activity of the polypeptide expressed from said marker gene in the absence of said test compound.

117. The method according to claim 114, wherein said marker gene encodes green fluorescent protein (GFP), red fluorescent protein (DsRed), alkaline phosphatase (AP), β-lactamase, chloramphenicol acetyltransferase (CAT), adenosine deaminase (ADA), aminoglycoside phosphotransferase (neor, G418r) dihydrofolate reductase (DHFR), hygromycin-B-phosphotransferase (HPH), thymidine kinase (TK), lacZ (encoding β-galactosidase), luciferase (luc), or xanthine guanine phosphoribosyltransferase (XGPRT).

118. The method according to claim 114, wherein said promoter is an adenovirus promoter, an SV40 promoter, a parvovirus promoter, a vaccinia virus promoter, a cytomegalovirus promoter, an MSH2 promoter, or a mammalian genomic DNA promoter.

119. The method according to claim 114, wherein said promoter is a 3-phosphoglycerate kinase gene promoter, an alcohol dehydrogenase-2 promoter, or a metallothionine promoter.

120. The method according to claim 113, wherein said cell type is mammalian or yeast.

121. A compound that increases retroviral cDNA integration into a host cell genome identified according to the method of claim 113.

122. A pharmaceutical composition for the increasing the efficiency of gene delivery in a gene therapy comprising a therapeutically effective amount of at least one compound identified according to the method of claim 113, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient.

123. A method of increasing retroviral cDNA integration into a host cell genome by administering a compound identified according to the method of claim 113 to said cell.

124. A method of improving the efficiency of gene delivery of a gene therapy of a patient comprising administering at least one compound identified according to the method of claim 113 to said patient.

125. The method according to claim 124, wherein said patient is a mammal.

126. The method according to claim 125, wherein said mammal is avian, feline, bovine, ovine, porcine, equine, rodent, simian, or human.

127. The method according to claim 126, wherein said mammal is a human.

128. Use of a compound identified according to the method of claim 113 in the manufacture of a pharmaceutical composition for improving the efficiency of gene delivery in a gene therapy.

129. A kit for identifying a compound that increases retroviral cDNA integration into a host genome comprising a retrovirus or retroviral vector having a marker gene that is expressed upon retroviral cDNA circularization.

130. The kit according to claim 129, further comprising at least one conventional kit component.

131. A method of screening for a compound which inhibits a DNA repair pathway of a cell, comprising:

a) contacting at least one component of a DNA repair pathway with a non-circularized retroviral cDNA in the presence of a test compound; and

b) determining the amount of retroviral cDNA circularization.

132. A method of identifying a compound that increases retroviral cDNA integration into a host genome comprising:

a) contacting a cell or cell extract with a non-circularized retroviral cDNA in the presence of a test compound; and

b) determining the amount of retroviral cDNA circularization.